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Attention: The Registrar: Genetically Modified Organisms
Directorate Genetic Resources
Department of Agriculture, Forestry and Fisheries
By email: GMOAppComments@daff.gov.za

Objection to the Application for General Release of Monsanto's GM Maize MON87460 x MON89034 x NK603

Please find our objection submission on the permit application for general release of Monsanto's GM Maize MON87460 x MON89034 x NK603, which consists of:

- Background on Biowatch South Africa
- Comments on the application

Yours sincerely

Rose Williams
Director

Biowatch South Africa

Biowatch is a non-governmental organisation formed in 1999, which strives for social and ecological justice within the context of food sovereignty. Biowatch works to challenge unsustainable agricultural practices and to advocate for agroecology as an ecologically viable alternative that safeguards people and land. This includes supporting smallholder farmers; working with civil society to create joint understanding and action; and constructively engaging with government in implementing policies and practices that promote, facilitate and actively support agroecology and farmers rights. We have a long track record of working on issues concerning seeds and indigenous knowledge systems, not only with farmers but also internationally.

Submission

Biowatch SA strongly objects to the granting of a permit for the general release of GM Maize MON87460 x MON89034 x NK603. We argue that this new GM maize will not safe-guard farmers in South Africa, or in the region, from the impacts of drought. This GM maize instead serves as a decoy to finding solutions that will really help to deal with the impacts of drought and other climate change induced hardships.

The reasons for our objection are as follows:

The claim of drought tolerance

Despite the hype that Monsanto has generated around the Water Efficient Maize for Africa (WEMA) project, only one drought tolerant product has been developed through genetic engineering, which is the gene in this application: Monsanto's MON87460 DroughtGard maize. The efficacy of this GM event has however been widely criticised, even by the pro-GM US Department of Agriculture (USDA), which noted that DroughtGard is unlikely to be more effective than conventionally bred varieties, which have improved the drought tolerance of maize at a rate of 1% a year. Monsanto's own test results also showed high variability in yields when the intensity and duration of the drought varied, so that for several tests MON87460 maize did not provide a statistically significant improvement in yields under drought conditions. [i]

A plant's response to environmental conditions is complex and results from the interaction of many different processes and the expression of many different genes that affect the growth and functioning of the plant. Genetic engineering currently is only able to manipulate a few genes at a time that do not significantly affect the plant's physiology or metabolism. However, strategies for creating resistance/tolerance to abiotic stresses are all based on significant changes in the plant's metabolism, and consequently the full consequences and potential risks (in the crop and broader environment) of manipulating such a complex system are greater and more difficult to assess.[ii] For example, the same genes that might induce drought stress tolerance might also limit plant growth.

The myth of increased production with GM crops

Disingenuous claims about drought tolerance are a concern since the introduction of other GM traits in crops in the USA (where these have been grown the longest) have not increased yields or reduced the pesticides used, as the industry claimed they would. For example, independent research in the USA has found that GM maize had only increased yields by 3-4% in the first 13 years of commercial production. This equates to only a 0.3% yield increase per year compared to increases of 1% per year in conventionally bred maize over the same period, and no increase in GM soya bean yields.[iii] If GM

crops cannot increase yields even in the USA - where high-input, irrigated, heavily subsidized commodity farming is the norm - it is irresponsible to assume that these would improve yields in South Africa and elsewhere in the region under water stress.

Negative implications for the region

This GM maize forms a part of the Water Efficient Maize for Africa (WEMA) project, which targets small-holder farmers in Kenya, Mozambique, Tanzania, Uganda and South Africa. A decision to approve this maize in South Africa, therefore has implications for the region. Monsanto claims that its interests in WEMA are philanthropic, because it is donating its drought tolerant MON87460 and Bt MON810 genes to the WEMA project. However, as South African regulators you will know that MON810 has failed in South Africa, and is also likely to fail in other countries in the region where it is being donated, and the efficacy of MON87460 is not confirmed. The donation of these two genes to WEMA buys good press for Monsanto, and opens up new markets in Africa and South Africa for traits conferring insect and herbicide resistance for which it can extract royalties, while also increasing the market for their herbicides, pesticides and fertilisers.

The claim of reduced pesticide use and the negative impact of glyphosate genes

We include pesticides in this argument because, although the GM industry has argued that Bt derived Cry genes will limit pesticide use by killing target pests, research indicates that over time secondary pests increase and farmers then spray pesticides to get rid of those pests. In the first 16 years that GM crops were grown in the USA, overall pesticide use increased by 183 million kg; 7% more than for non-GM crops.[iv]

Stacking the drought tolerance gene with Bt and glyphosate resistant genes also seems to be counter-productive as studies have found that glyphosate decreases biomass and seed yields in drought conditions,[v] and Bt maize has been found to reduce soil respiration, bacterial communities, and mycorrhizal colonisation - all very important for making crops stress tolerant.

Appropriate responses to climate change and consequent drought

The industrial food system is the biggest source of the greenhouse gas emissions that cause climate change, accounting for half of global emissions when taking the conversion of land to agriculture, on-farm production, distribution and waste into account.[vi] Mechanised tilling and the petro-chemical inputs used in industrial agriculture kill soil life, releasing carbon and destroying the fertility and water holding capacity of the soil. High yielding hybrid crops are also heavy users of fertiliser and require irrigation. Agricultural irrigation uses 60% of South Africa's fresh water resources.[vii]

Despite evidence of the harm to the environment, and the climate and water crisis, government continues to promote industrial agriculture. This includes the promotion of agricultural commodity crops that do not contribute to food security, such as timber and sugar plantations. These are high water consumers, and have exacerbated the impact of the drought in several of the most drought-stricken provinces. If the Department is concerned about the impacts of the drought on smallholder farmers – at whom this maize is targeted – then serious consideration must be given to transforming agriculture to promote and support agroecological farming methods. These methods are more able to cushion farmers against extreme climate impacts (droughts and floods), and enable the soil to sequester carbon thus reversing carbon impacts.

Farmer seed systems

In South Africa 2.5 million smallholders still farm for subsistence,[viii] relying on farm-saved seed for 60-70% of their seed needs.[ix] These locally adapted farmer varieties, or landraces, are variable in

appearance and traits due to their diverse genetic make-up. It is important to maintain this inherent diversity, which is the strength of farmer seed systems in that it enables crops to quickly adapt to changing conditions such as climate variability, difficult growing conditions and pests.

GM seeds require bought industrial inputs to grow well, and provide a one size fits all solution which doesn't match smallholder needs. Even if the drought tolerant gene is donated, there will still be fees payable on the Bt and herbicide tolerant genes.

Furthermore, smallholders that wish to conserve their seed are not protected from contamination, or compensated when it does occur. Biowatch SA recently carried out testing of the maize grown by farmers which Biowatch support. These farmers are careful to maintain their traditional seed, farm in isolated locations and actively avoid GMOs. They were dismayed to find that 5 out of the 42 samples tested were contaminated with Bt and herbicide tolerance genes.

Commercialisation of GM Maize MON87460 x MON89034 x NK603 can only lead to further problems for smallholder farmers wanting to maintain their genetic resources and seed systems.

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